PSYC: Research Methods

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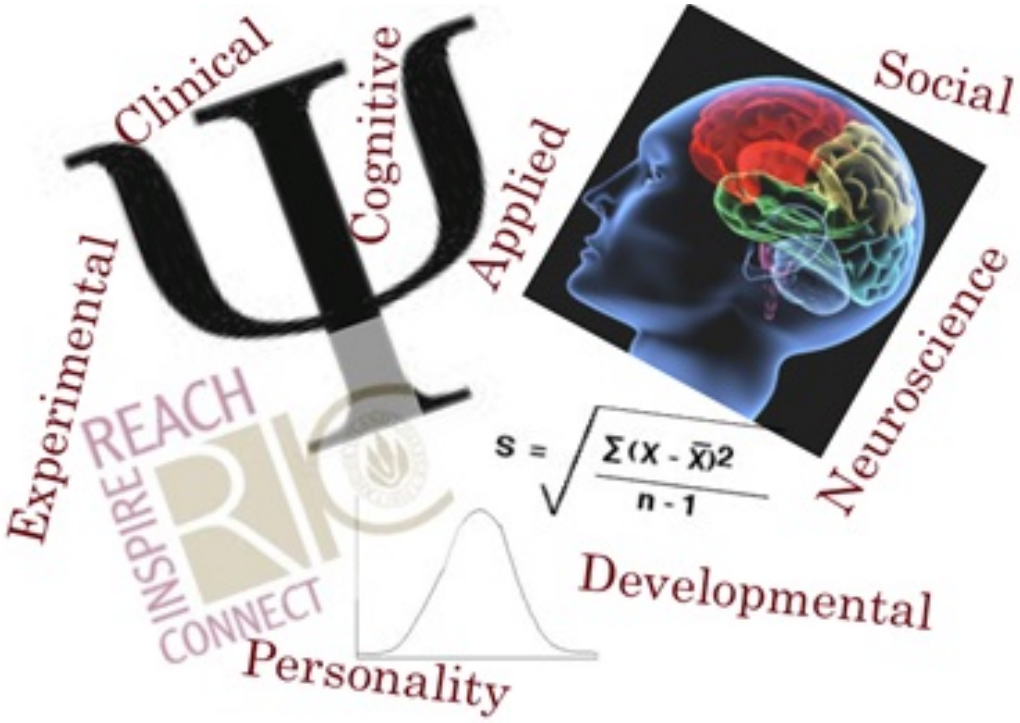


PSYC305L

Agenda

- Variables
- Lab 1

Announcements

- First paper due today

Variables

- Variable - Event, situation, behavior or characteristic which varies
- Dependent variable – measured output
  - Behavior/outcome due to independent variable
- Independent variable – what you manipulate or compare
  - Given drug or not (manipulate)
  - Left vs. right hand (compare)

Which of the following is NOT a variable?

a. Hair color
b. Inches in a foot
c. Weight
d. Attitudes on gun control
e. Intelligence scores

Operational definition

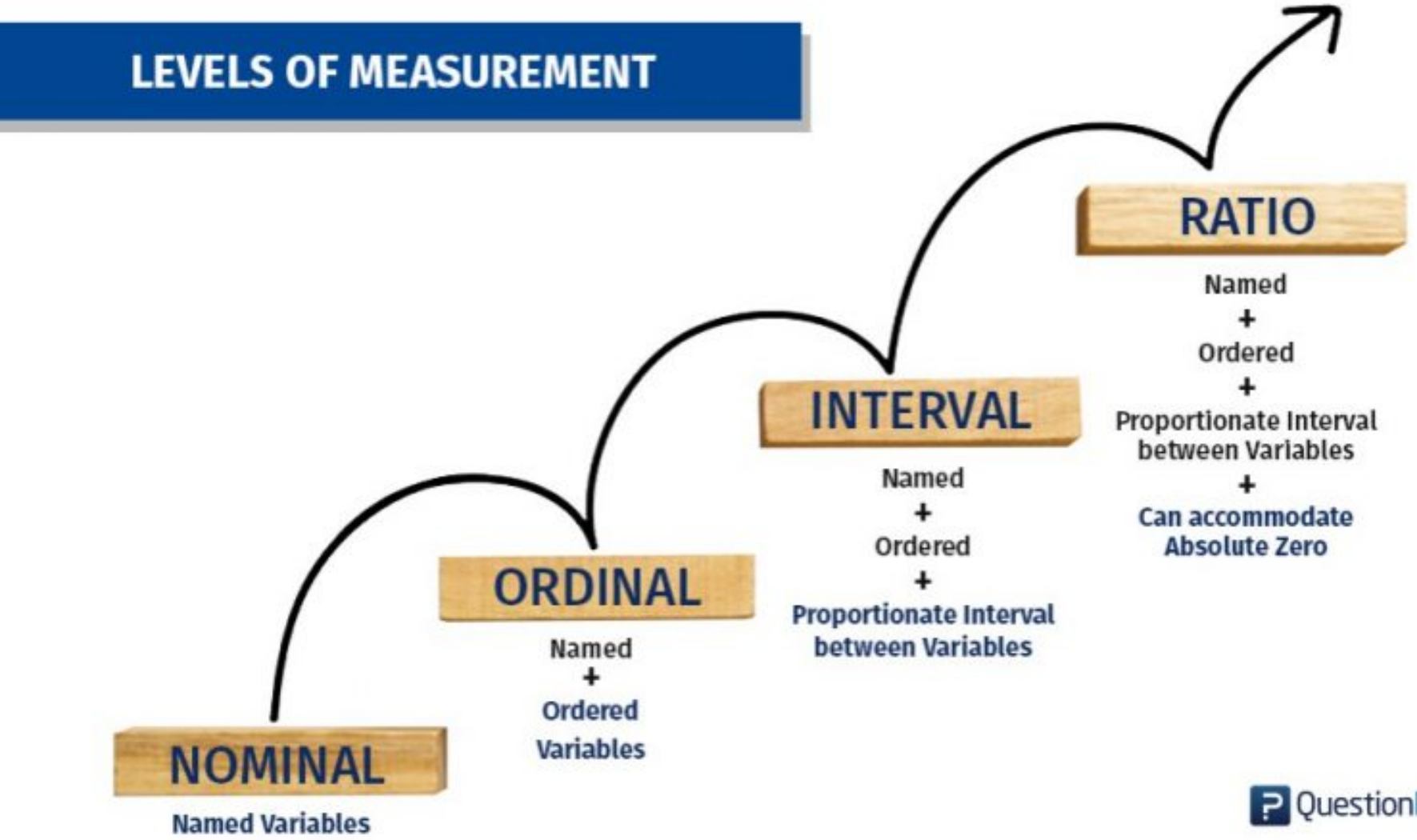
Specifying how variable(s) will be observed and/or measured in a study

- Cognitive performance
  - Reaction time in ms to respond to stimulus
  - Accuracy
- Stress
  - Self report questionnaire, BP, cortisol
- Weight
  - Wt. in lb. using a spring scale with participants fully undressed after 10 hrs. of fasting

Types of Variables

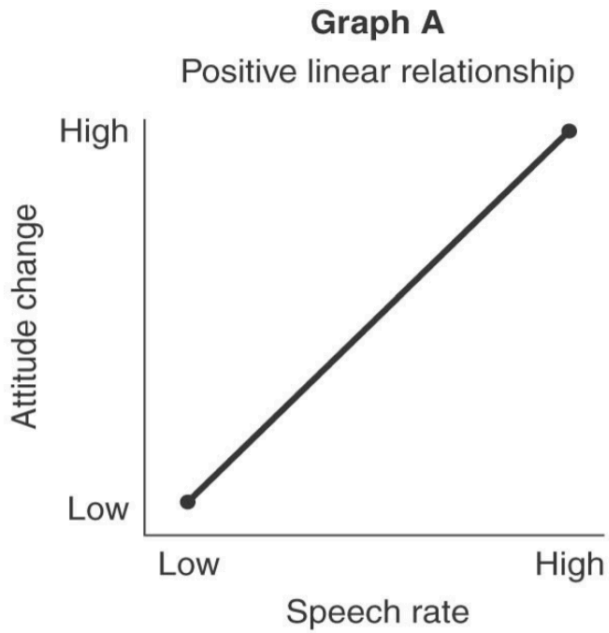
- *Categorical/nominal scale* – mutually exclusive, non-ordered
  - Sex, what brand of smart phone
- *Ordinal scale* – order matters, but the difference between variables does not
  - Satisfied-unsatisfied ratings
- *Interval scale* – difference between variables matters, but zero does not mean absence
  - Calendar years
- *Ratio scale* – now zero has meaning
  - Distance

Types of Variables



Relationships between Variables

- Do variables vary systematically together?
  - Ex. As the number of days absent increases, do grades in the class decrease also?
- Cannot be done with nominal data (no order)

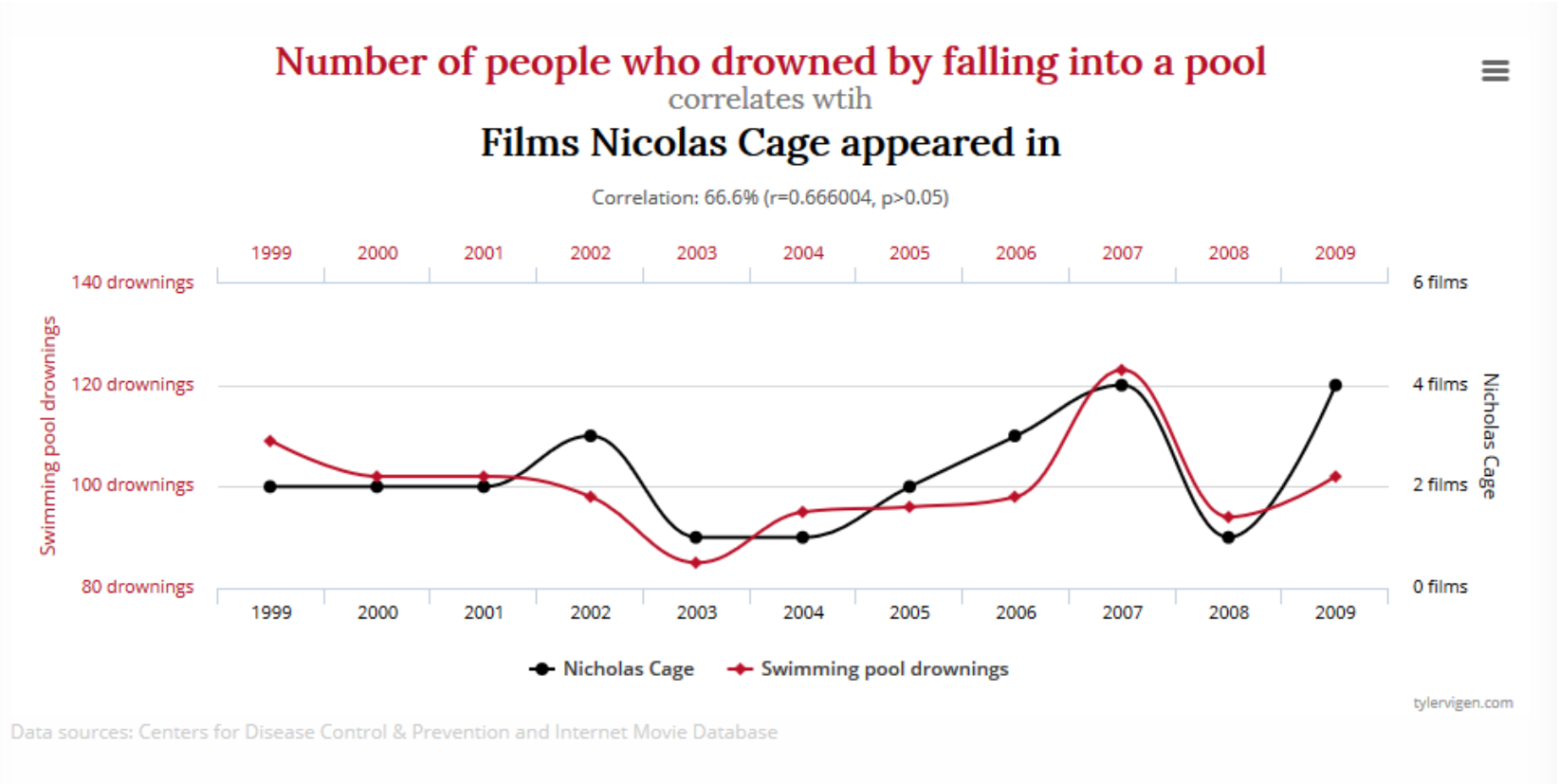

Graph A
Positive linear relationship
High
Low
Attitude change
Low
High
Speech rate

Cognitive neuroscience methods

- Correlation versus causation

Cognitive neuroscience methods

- Correlation versus causation

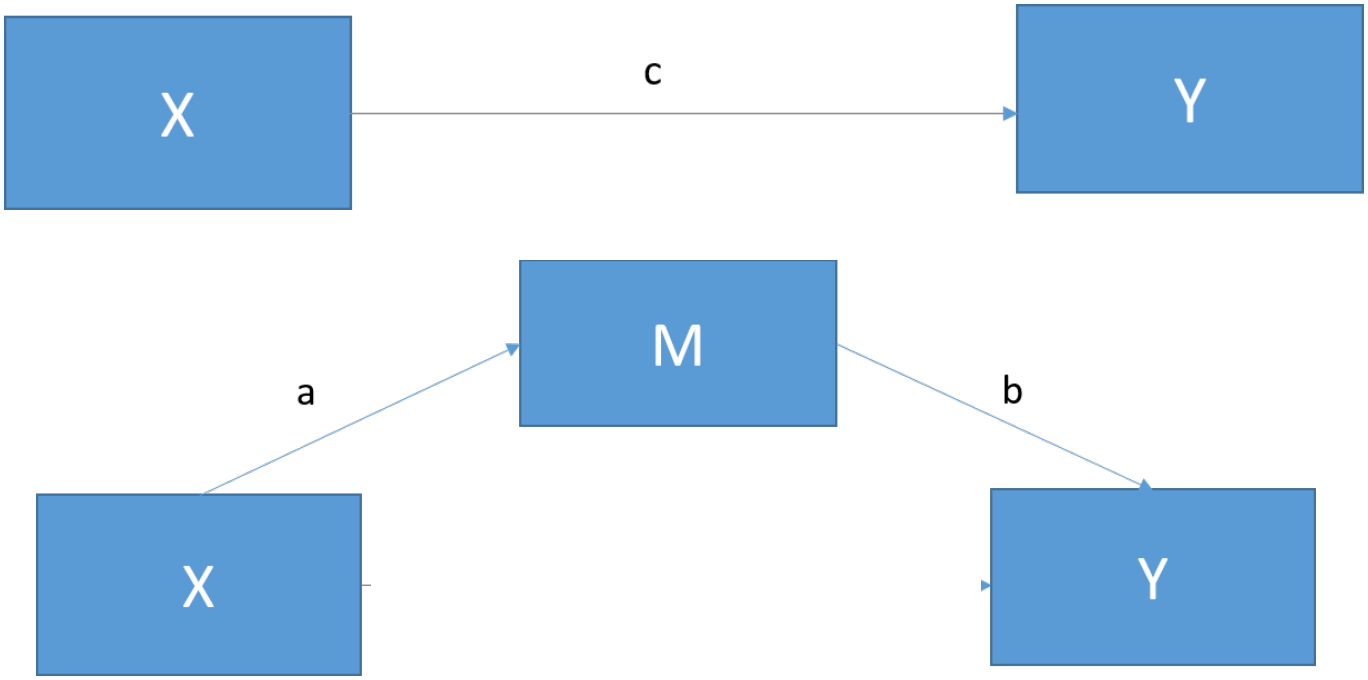


Do Nicolas cage movies *cause* swimming pool drownings?

Correlation vs. Causation

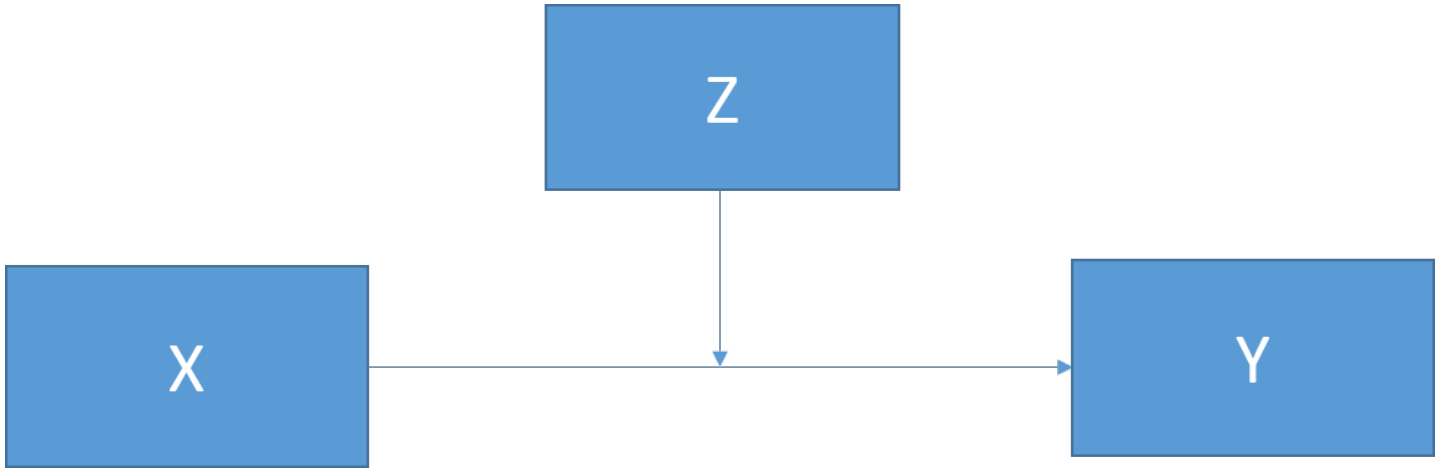
- Correlation – relationship between variables
  - Might be other reasons for the relationship
- Causation – one variable causes another
  - Once you have eliminated all other possibilities

Mediation



- Mediation – how/why a relationship exists.
  - Mediator is the causal result of X (IV) and causal antecedent of Y (DV)
  - Example:
  - X – grades
  - Y – happiness
  - M – self-esteem

Moderation



- Moderation – affects the relationship itself
  - NOT the causal result of X
  - Example:
  - X – amount of time studying
  - Y – grades
  - Z – grade level (elementary or college)

Think, pair, share

- Design a study to test if childhood weight is related to SAT score.
  - Conditions, participants, type of data, possible mediators or moderators
  - Body mass index (BMI), CDC
    - <18.5: underweight
    - 25 – 30: overweight
    - >30: obese
  - SAT: 400-1600

Lab 1

Run the change detection task yourself

For next time, run 4 other people (5 total)